H 5

```
   SSSSSSSSSSSS     000000000     RRRRRRRRRRRR     TTTTTTTTTTTTTTT      333333333        222222222
   SSSSSSSSSSSS     000000000     RRRRRRRRRRRR     TTTTTTTTTTTTTTT      333333333        222222222
   SSSSSSSSSSSS     000000000     RRRRRRRRRRRR     TTTTTTTTTTTTTTT      333333333        222222222
SSS              000         000  RRR         RRR        TTT         333         333  222         222
SSS              000         000  RRR         RRR        TTT         333         333  222         222
SSS              000         000  RRR         RRR        TTT         333         333  222         222
SSS              000         000  RRR         RRR        TTT                     333              222
SSS              000         000  RRR         RRR        TTT                     333              222
SSS              000         000  RRR         RRR        TTT                     333              222
   SSSSSSSSS     000         000  RRRRRRRRRRRR           TTT                  333              222
   SSSSSSSSS     000         000  RRRRRRRRRRRR           TTT                  333              222
   SSSSSSSSS     000         000  RRRRRRRRRRRR           TTT                  333              222
            SSS  000         000  RRR   RRR              TTT                     333        222
            SSS  000         000  RRR   RRR              TTT                     333        222
            SSS  000         000  RRR   RRR              TTT                     333        222
            SSS  000         000  RRR      RRR           TTT         333         333     222
            SSS  000         000  RRR      RRR           TTT         333         333     222
            SSS  000         000  RRR      RRR           TTT         333         333     222
SSSSSSSSSSSS        000000000     RRR         RRR        TTT            333333333     222222222222222
SSSSSSSSSSSS        000000000     RRR         RRR        TTT            333333333     222222222222222
SSSSSSSSSSSS        000000000     RRR         RRR        TTT            333333333     222222222222222
```

```
_$2

Pse
---
SOR

SOR

SOR

SOR

_LI
```

```
**FILE**ID**DKS



DDDDDDDD    KK      KK    SSSSSSSS
DDDDDDDD    KK      KK    SSSSSSSS
DD      DD  KK      KK  SS
DD      DD  KK      KK  SS
DD      DD  KK    KK    SS
DD      DD  KK    KK    SS
DD      DD  KKKKKK        SSSSSS
DD      DD  KKKKKK        SSSSSS
DD      DD  KK    KK            SS
DD      DD  KK    KK            SS
DD      DD  KK      KK          SS      ....
DD      DD  KK      KK          SS      ....
DDDDDDDD    KK      KK  SSSSSSSS        ....
DDDDDDDD    KK      KK  SSSSSSSS        ....


RRRRRRRR    EEEEEEEEEE    QQQQQQ
RRRRRRRR    EEEEEEEEEE    QQQQQQ
RR      RR  EE          QQ      QQ
RR      RR  EE          QQ      QQ
RR      RR  EE          QQ      QQ
RR      RR  EE          QQ      QQ
RRRRRRRR    EEEEEEEE    QQ      QQ
RRRRRRRR    EEEEEEEE    QQ      QQ
RR  RR      EE          QQ  QQ  QQ
RR  RR      EE          QQ  QQ  QQ
RR    RR    EE          QQ    QQ
RR    RR    EE          QQ    QQ
RR      RR  EEEEEEEEEE    QQQQ  QQ
RR      RR  EEEEEEEEEE    QQQQ  QQ
```

```
OPC

'PU
'BB
'BB
'BB
'BB
'BB
'BB
'BB
'BB
'BL
'BL
'FF
'FF
'CM
'CM
'EX
'EX
'IN
'AC
'AO
'AO
'SO
'SO
'CV
'CV
'AS
'CV
'CA
'CA
'XF
'ES
'ES
'ES
```

```
!
! Version:      'V04-000'
!
!****************************************************************************
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!****************************************************************************

%IF %SWITCHES(DEBUG)
%THEN
    GLOBAL D:   INITIAL(%BLISS(BLISS16));
    %IF %BLISS(BLISS16) %THEN
        REQUIRE 'SYS$LIBRARY:TUTIO';
        MACRO OUTPUT_(X)[] =
            (IF .D THEN (TTY_PUT_QUO(X); TTY_PUT_CRLF())) %;
    %FI
    %IF %BLISS(BLISS32) %THEN
        EXTERNAL ROUTINE SOR$$OUTPUT;
        MACRO OUTPUT_(X)[] =
            (IF .D THEN SOR$$OUTPUT(UPLIT(%CHARCOUNT(X),UPLIT BYTE(X))
                %IF %LENGTH GTR 1 %THEN , %REMAINING %FI )) %;
    %FI
%ELSE
    MACRO
        OUTPUT_(X) = %;
%FI

%IF %BLISS(BLISS32) %THEN
    REQUIRE 'SRC$:COM';             ! Common definitions for VAX-11 SORT/MERGE
    LIBRARY 'SRC$:SRTSPC';          ! Common definitions needed for this module
    LIBRARY 'SRC$:SFKEYWRD';        ! Spec file keyword definitions
%ELSE
    LIBRARY 'S11V3SRC:SMCOM';       ! Common definitions for PDP-11 SORT/MERGE
    LIBRARY 'S11V3SRC:SRTSPC';      ! Common definitions needed for this module
    LIBRARY 'S11V3SRC:SFKEYWRD';            ! Spec file keyword definitions
%FI

MACRO
```

```
OPC

MAC
'CV
'CV
'AD
'AD
'SU
'SU
'MU
'MU
'DI
'DI
'CV
'CV
'CV
'CV
'CV
'CV
'CV
'AC
'MO
'CM
'MN
'TS
'EM
'PO
'CV
'CV
'AD
'AD
'SU
'SU
'MU
'MU
'DI
'DI
'CV
'CV
'CV
'CV
'CV
'CV
'CV
'AC
'MO
'CM
'MN
'TS
'EM
'PO
'CV
'CL
'MO
'MO
'PU
'CV
'CV
'CV
```

```
    IF_ERROR_( X ) = %IF %BLISS( BLISS16 ) %THEN IF X NEQ SS$_NORMAL
                                             %ELSE IF NOT X %FI %;
MACRO
    WRN_(MSG) =
        BEGIN
        IF ERR_CNTL( %IF %DECLARED(KYW_LINE) %THEN .KYW_LINE %ELSE 0 %FI,
                     MSG )
            NEQ SUCCESS THEN RETURN FAIL;
        END %,
    ERR_(LINE, MSG) =
        BEGIN
        IF ERR_CNTL( LINE,
                     %IF %BLISS( BLISS16 ) %THEN -ABS( MSG ) %ELSE MSG  %FI)
            NEQ SUCCESS THEN RETURN FAIL;
        END %;

MACRO
        ERR_CNTL =      EC$ERR_CNTL %,
        SPC_HEAP =      SH$SPC_HEAP %,
        SPC_ALLOC =     SA$SPC_ALLOC %,
        SKIP_IGNORED =  SI$SKIP_IGNORED %,
        SKIP_COMMA =    SC$SKIP_COMMA %,
        GET_KYW_TYPE =  GKT$GET_KYW_TYPE %,
        GET_CHAR_CLAUSE =       GCC$GET_CHAR_CLAUSE %,
        GET_ONE_CHAR =  GOC$GET_ONE_CHAR %,
        GET_NEXT_SPEC = GNS$GET_NEXT_SPEC %,
        GET_SUB_SPEC =  GSS$GET_SUB_SPEC %,
        GET_FILE_SPEC = GFS$GET_FILE_SPEC %,
        GET_STRING =    GS$GET_STRING %,
        PARSE_COLL =    PC$PARSE_COLL %,
        PARSE_MOD =     PM$PARSE_MOD %,
        PARSE_IGN =     PI$PARSE_IGN %,
        PARSE_TEST =    PT$PARSE_TEST %,
        PARSE_KEY =     PK$PARSE_KEY %,
        CONV_CONSTANTS = CC$CONV_CONSTANTS %,
        SEARCH_TABLE =  ST$SEARCH_TABLE %,
        INIT_CS_TAB =   ICT$INIT_CS_TAB %,
        DO_FOLD =       DF$DO_FOLD %,
        CVT_ATB =       CA$CVT_ATB %;
%IF %BLISS(BLISS16) %THEN
MACRO
        SOR$$SFPRS =
            %IF VAR_IS_SORT_(%VARIANT) %THEN
                $SSFPR
            %ELSE
                $MSFPR
            %FI                         %;          ! Use a shorter routine name
%FI

!EXTERNAL ROUTINE
!    ERR_CNTL    : CA_LINKAGE; ! Error control routine

%IF NOT %DECLARED(SOR$_WKAREA) %THEN
LITERAL SOR$_WKAREA = SOR$_SRTIWA;
%FI
```

```
! Define the keyword literals (KW_xxx)
!
MACRO   NAM_[A, B] = %NAME('KW_',A) = %COUNT %;
LITERAL NAM_( KEYWORDS );
```

```
%IF NOT %DECLARED(FAIL    ) %THEN LITERAL FAIL    = 0; %FI
%IF NOT %DECLARED(SUCCESS) %THEN LITERAL SUCCESS = 1; %FI
%IF NOT %DECLARED(FALSE   ) %THEN LITERAL FALSE   = 0; %FI
%IF NOT %DECLARED(TRUE    ) %THEN LITERAL TRUE    = 1; %FI

MACRO
        GC_(X,O,Y) =
             %IF %IDENTICAL(X,S)  %THEN 1 %ELSE
             %IF %IDENTICAL(X,D)  %THEN 2 %ELSE X %FI %FI ^ 4 +
             %IF %IDENTICAL(O,LT) %THEN %B'11' %ELSE
             %IF %IDENTICAL(O,EQ) %THEN %B'00' %ELSE
             %IF %IDENTICAL(O,GT) %THEN %B'01' %ELSE O %FI %FI %FI ^ 2 +
             %IF %IDENTICAL(Y,S)  %THEN 1 %ELSE
             %IF %IDENTICAL(Y,D)  %THEN 2 %ELSE Y %FI %FI ^ 0 %,
        GC_L1_(X) = X<4,2,0> %,
        GC_OP_(O) = O<2,2,1> %,
        GC_L2_(Y) = Y<0,2,0> %;

LITERAL                                 ! returns from get_char_clause
        GC_SINGLE=       1,             ! single char
        GC_DOUBLE=       2,             ! double char
        GC_S_TO_S=       3;             ! single - single

LITERAL
    MAX_CONDX  = TDT_MAX,               ! Max conditions in omit/incls
    MAX_CONST  = CFT_MAX,               ! Max constants in omit/incls
    MAX_FIELDS = FDT_MAX;               ! Max fields definitions

LITERAL
    %UPADDR = ( %BPADDR + %BPUNIT -1 ) / %BPUNIT;       ! Units per address

! Definitions of fields in SYM_TAB
!
MACRO
    SYM_NAM_ADR =        0, 0, %BPADDR, 0 %,     ! Address of name in spec buffer
    SYM_NAM_LEN =        1, 0,  8, 0 %,          ! Length of name in spec buffer
    SYM_INDEX   =        1, 8,  8, 0 %;          ! Index into FDT or TDT

STRUCTURE                                        ! Local symbol table
    SYM_TAB[ O,B,P,S,E; BS ] =
        [ BS*(%UPADDR+2) ]
        ( SYM_TAB + O*(%UPADDR+2) + B*%UPADDR )<P,S,E>;

! Definitions of fields in CON_SYM_TAB
!
MACRO
    CON_NAM_ADR =        0, 0, %BPADDR, 0 %,     ! Address of name in spec buffer
    CON_NAM_LEN =        1, 0,  8, 0 %,          ! Length of name in spec buffer
    CON_INDEX =          1, 8,  8, 0 %;          ! Index into appropriate table
%IF %BLISS(BLISS32) %THEN
MACRO
    CON_LENGTH =         1, 16, 8, 0 %;          ! Result length, for condx key/data only
%ELSE
MACRO
    CON_LENGTH =         2,  0, 8, 0 %;          ! Result length, for condx key/data only
%FI
```

```
STRUCTURE                                       ! Local constant symbol table
    CON_SYM_TAB[ O,B,P,S,E; BS ] =
        [ BS*(%UPADDR+4) ]
        ( CON_SYM_TAB + O*(%UPADDR+4) + B*%UPADDR )<P,S,E>;

MACRO
    LOWER_(X) = ((X) OR %X'20') %,
    UPPER_(X) = ((X) AND NOT %X'20') %;

LITERAL
    _LEN = 0,
    _PTR = 1,
    _LINE = 2;

!MACRO
!    ALLOC_(X) =
!       %IF %CTCE(X) %THEN %IF X EQL 0
!       %THEN .CA[CA_WRK_ADR]
!       %ELSE SPC_ALLOC(X) %FI
!       %ELSE SPC_ALLOC(X) %FI %;

MACRO
    ALLOC_(X) =
        %IF %CTCE(X) AND (X) EQL 0
        %THEN .CA[CA_WRK_ADR]
        %ELSE %IF %BLISS(BLISS32) %THEN SPC_ALLOC(X)
              %ELSE BEGIN
                    LOCAL S;
                    IF (S = SPC_ALLOC(X)) EQL 0 THEN RETURN FAIL;
                    .S
                    END
              %FI
        %FI %;

MACRO
    HEAP_(X) =
        %IF %BLISS(BLISS32) %THEN SPC_HEAP(X)
        %ELSE   BEGIN
                LOCAL S;
                IF (S = SPC_HEAP(X)) EQL 0 THEN RETURN FAIL;
                .S
                END
        %FI %;

LITERAL
    TRDT_UNIT = 3;              ! Temporary RDT, first three bytes of RDT

STRUCTURE
    TRDT_TAB[ O,B,P,S,E; BS ] =
        [ BS*TRDT_UNIT ]
        ( TRDT_TAB + O*TRDT_UNIT + B )<P,S,E>;
MACRO
    TRDT_INCLUDE        =   0, 0,  1, 0 %,              ! Include/omit, Include = 1
    TRDT_CONDX          =   0, 1,  1, 0 %,              ! Conditional = 1
    TRDT_TDT_IDX        =   1, 0,  8, 0 %,              ! Index into TDT
    TRDT_KFT_IDX        = 2, 0,  8, 0 %;                ! Index into KFT
```

```
SFK

! F
!**
!*
!*
!*
!*
!*
!*
!*
!*
!*
!*
!*
!*
!*
!*
!*
!*
!*
!*
!*
!*
!**

!++
! F

! A


! E

! A

! M





!--
```

0362 AH-BT13A-SE
VAX/VMS V4.0

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COM
REQ

SMGUSRTRM
LIS

SORLIB
REQ

SORTSHR
MAP

DEFS0
REQ

DKS
REQ

SORT32

SRTSPC
REQ

CDDTYPE
R32

SORTMERGE
MAP

SMGVECTOR
LIS

CHKPNT
REQ

CDDMAC
R32

SFKEYWRD
REQ

RECSYM
R32

SRTTRN
MAP

OPCODES
REQ